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Avago Docket No.: 10031004-1  
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This is a full and timely response to the non-final Office Action mailed by the U.S. Patent and Trademark Office on June 20, 2006. Claims 1-11 remain pending in the present application. Claims 12-22 are canceled. Claim 1 is amended. Support for the claim amendments can be found in FIG. 3F and in the specification at least in paragraphs 0039 through 0041. In view of the foregoing amendments and following remarks, reconsideration and allowance of the present application and claims are respectfully requested.

Election/Restriction

Applicants acknowledge that the restriction requirement is made final.

Accordingly, Applicants have canceled claims 12-22.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-3, 5, 7 and 9-11 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent number 5,659,565 to Kitamura (hereafter *Kitamura*).

Claims 1, 5, 7-9 and 11 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent number 6,589,806 to Sasaki (hereafter *Sasaki*).

A proper rejection of a claim under 35 U.S.C. § 102 requires that a single prior art reference disclose each element of the claim. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). Thus, anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. Accordingly, the single prior art reference must properly disclose, teach or suggest each element of the claimed invention.

Applicants have amended independent claim 1 to include "a cladding layer covering the sublayer and sidewalls of the optical waveguide core mesa and extending over at least part of the growth mask, the cladding layer comprising a plane major surface that is substantially parallel to the growth surface and that extends over at least a part of the growth mask on each side of the growth window." Applicants respectfully submit that at least these features are not disclosed, taught or suggested by *Kitamura*.

In contrast, to Applicants' claimed device, *Kitamura* illustrates and describes an insulating layer 58 of silicon dioxide arranged to expose the upper surface of cap layer 57 over the quantum well 54. The insulating layer 58 rises above the uppermost surface of the

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cap layer 57 on each side of the quantum well 54 over insulating mask 52. Thus, the combination of insulating area 58 and cap layer 57 forms a discontinuous surface upon which electrode 59 is applied. See *Kitamura* FIG. 6 (and column 5 line 21 to column 6, line 9). A discontinuous surface upon which an electrode is applied does not disclose, teach or suggest Applicants' claimed cladding layer covering the sublayer and sidewalls of the optical waveguide core mesa and extending over at least part of the growth mask, the cladding layer comprising a plane major surface that is substantially parallel to the growth surface and that extends over at least a part of the growth mask on each side of the growth window. For at least this reason, *Kitamura* does not anticipate Applicants' claimed device.

Applicants respectfully submit that dependent claims 2, 3, 5, 7 and 9-11, which depend directly or indirectly from independent claim 1, are also allowable for at least the reason that these claims include all the features and limitations of allowable independent claim 1. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

*Sasaki* does not anticipate Applicants' amended independent claim 1. Applicants' claim 1, as amended, includes "a cladding layer covering the sublayer and sidewalls of the optical waveguide core mesa and extending over at least part of the growth mask, the cladding layer comprising a plane major surface that is substantially parallel to the growth surface and that extends over at least a part of the growth mask on each side of the growth window." At least these features are not disclosed, taught or suggested by *Sasaki*.

In contrast, to Applicants' claimed device, *Sasaki* illustrates and describes a block layer 7 (FIG. 2) that abuts only a single sidewall of an optical waveguide core mesa. A separate block layer 8 is above block layer 7 and contacts the optical waveguide core mesa only at the apex of the sidewall and the upper surface of the optical waveguide core mesa. A separate buried layer 9 contacts only the upper surface of the optical waveguide core mesa. Thus, none of block layer 7, block layer 8 and block layer 9 cover the sublayer and sidewalls of the optical waveguide core mesa as recited in Applicants' claim 1. For at least this reason, *Sasaki* does not anticipate Applicants' claimed device.

Applicants respectfully submit that dependent claims 5, 7-9 and 11, which depend directly or indirectly from independent claim 1, are also allowable for at least the reason that these claims include all the features and limitations of allowable independent claim 1. See *In re Fine, supra*.

**Rejection Under 35 U.S.C. § 103**

Claim 4 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kitamura* as applied to claim 1.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kitamura* as applied to claims 1 and 5 in view of U.S. Patent No. 5,952,673 to Higashi *et al.* (hereafter *Higashi*).

For a claim to be properly rejected under 35 U.S.C. § 103, “[t]he PTO has the burden under section 103 to establish a *prima facie* case of obviousness. In order to make a proper *prima facie* case of obviousness; three basic criteria must be met, as set forth in MPEP 706.02(j). First, there must be some suggestion or motivation; either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references, when combined, must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicant’s disclosure.

Applicants’ claim 4 depends directly from independent claim 1 and includes all the features of claim 1. Claim 1, as amended, recites “a cladding layer covering the sublayer and sidewalls of the optical waveguide core mesa and extending over at least part of the growth mask, the cladding layer comprising a plane major surface that is substantially parallel to the growth surface and that extends over at least a part of the growth mask on each side of the growth window.” At least these features are not disclosed, taught or suggested by *Kitimura*.

*Kitamura* illustrates and describes a combination of insulating layer 58 and cap layer 57 that forms a discontinuous surface upon which electrode 59 is applied. The discontinuous surface upon which electrode 59 is applied is not Applicants’ cladding layer comprising a plane major surface that is substantially parallel to the growth surface and that extends over at least part of the growth mask on each side of the growth window. For at least the reason that *Kitamura* does not disclose, teach or suggest these features, *Kitamura* does not render Applicants’ claim 4 obvious.

Applicants’ claim 6 depends indirectly from independent claim 1 and includes all the features of claim 1. Claim 1, as amended, recites “a cladding layer covering the sublayer and

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sidewalls of the optical waveguide core mesa and extending over at least part of the growth mask, the cladding layer comprising a plane major surface that is substantially parallel to the growth surface and that extends over at least a part of the growth mask on each side of the growth window.” The proposed combination does not disclose, teach or suggest at least these features of Applicants’ claimed device.

*Kitamura*, as shown above, illustrates and describes a discontinuous surface upon which electrode 59 is applied. *Higashi* illustrates and describes an optical semiconductor device that comprises a quantum well structure of an AlGaInAs material formed on an InP substrate. *Higashi* is entirely silent regarding the features of Applicants’ claimed cladding layer. Accordingly, the proposed combination does not render Applicants’ claimed device obvious.

**CONCLUSION**

Should the Examiner have any comment regarding the Applicants’ response or believe that a teleconference would expedite prosecution of the pending claims, Applicants request that the Examiner telephone Applicants’ undersigned attorney.

Respectfully submitted,

**Smith Frohwein Tempel Greenlee Blaha LLC**  
**Customer No. 35856**

By:



Robert A. Blaha  
Registration No. 43,502  
(770) 709-0069